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IS 13640 (1993): General introduction for milling machines with table of fixed height, with horizontal or vertical spindle [PGD 3: Machine Tools]

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क्षैतिज अथवा ऊर्ध्वाकार तकुए वाली स्थिर ऊँचाई वाली टेबल की मिलिंग मशीनों का सामान्य परिचय

Indian Standard

GENERAL INTRODUCTION FOR MILLING MACHINES WITH TABLE OF FIXED HEIGHT, WITH HORIZONTAL OR VERTICAL SPINDLE

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
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Machine Tool Basics and Modular Units Sectional Committee, PE 03

NATIONAL FOREWORD

This Indian Standard which is identical with ISO 1984-0 : 1984 'Test conditions for milling machines with table of fixed height, with horizontal or vertical spindle — General introduction' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendations of the Machine Tool Basics and Modular Units Sectional Committee and approval of the Production Engineering Division Council.

The text of ISO standard has been approved as suitable for publication as Indian Standard without deviations. Certain conventions are however not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Only the English language text of the international standard has been retained while adopting it as Indian Standard.

In the adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in its place, are listed below along with its degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 1701/0-1984 Test conditions for milling machines with table of variable height, with horizontal or vertical spindle — Part 0 : General introduction	IS 13634 : 1993 General introduction for milling machines with table of variable height, with horizontal or vertical spindle	Identical
ISO 3855-1977 Milling cutters — Nomenclature	IS 1830 : 1983 Technical supply conditions for milling cutters	Technical equivalent

Indian Standard

GENERAL INTRODUCTION FOR MILLING MACHINES WITH TABLE OF FIXED HEIGHT, WITH HORIZONTAL OR VERTICAL SPINDLE

1 Scope and field of application

This part of ISO 1984 defines the machining processes that can be carried out on milling machines with table of fixed height, with horizontal or vertical spindle, and describes the different types of machines.

Milling machines with table of variable height are covered by ISO 1701.

This part of ISO 1984 also gives a terminology for the main elements of the machine.

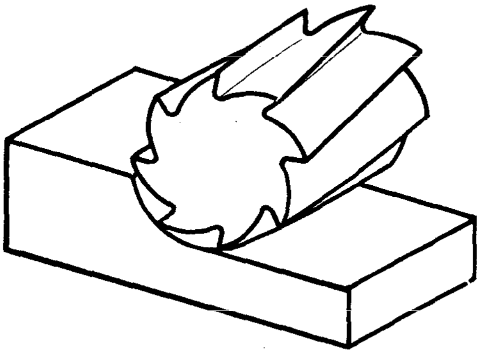

Figure 1 — Slab milling operation

2 References

ISO 1701/0, *Test conditions for milling machines with table of variable height, with horizontal or vertical spindle — Part 0 : General introduction.*

ISO 3855, *Milling cutters — Nomenclature.*

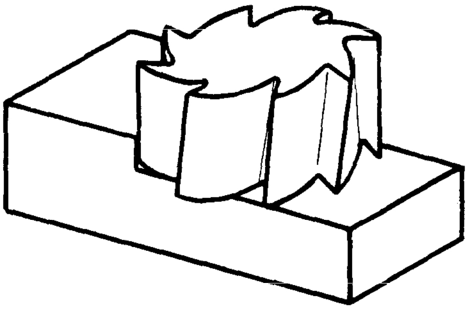

Figure 2 — Face milling operation

3 Definitions of the machining processes that can be carried out

3.1 Milling operations

Milling is a machining operation which consists of removing material by means of a rotary tool called a "milling cutter" of which there are several different types.

The usual milling operations can be divided into three categories :

- slab milling operations (see figure 1);
- face milling operations (see figure 2);
- end milling operations (see figure 3).

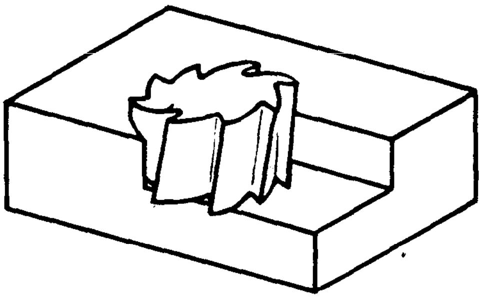

Figure 3 — End milling operation

3.2 Other operations

In addition to normal milling operations as described in 3.1, other operations such as boring and metal slitting (by the use of a metal slitting saw) may be carried out on milling machines.

4 Description of machines

In milling machines with a table of fixed height and with a horizontal or vertical spindle, the bed is rigidly fixed to the column (see figures 4 and 5).

In this type of machine, the cutting movement is given by the spindle, the axis of which is horizontal or vertical.

The feed movements are as follows.

4.1 Spindle with a horizontal axis (see figure 4)

— the X axis of motion constitutes the longitudinal movement of the table;

— the Y axis of motion constitutes the vertical movement of the spindle head;

— the Z axis of motion is parallel to the spindle axis and constitutes the transverse movement of the table.

4.2 Spindle with a vertical axis (see figure 5)

— the X axis of motion constitutes the longitudinal movement of the table;

— the Y axis of motion constitutes the transverse movement of the table;

— the Z axis of motion is parallel to the spindle axis and constitutes the vertical movement of the spindle head;

NOTE — All these feed movements may be carried out by a rapid traverse of the elements in question.

5 Nomenclature

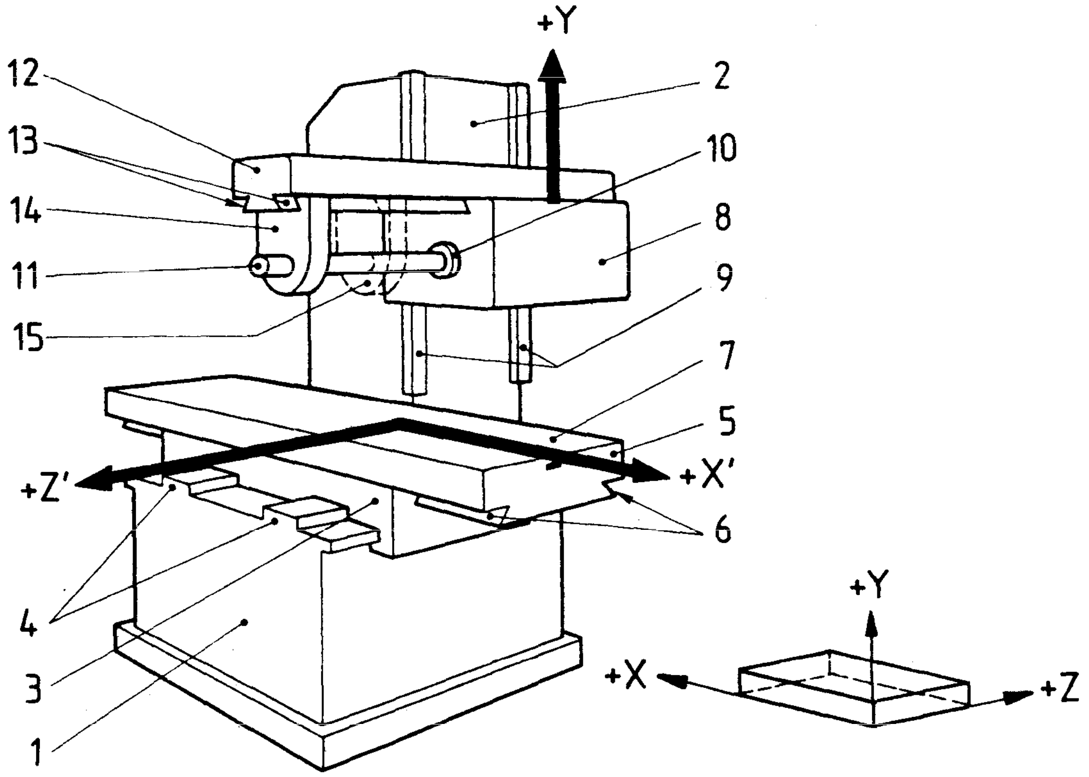

Figure 4 — Milling machine with table of fixed height and with horizontal spindle and a sliding vertical saddle spindle head

Ref.	Designation
	English
1	Bed
2	Column
3	Saddle
4	Saddle slideways
5	Table
6	Table slideways
7	Table surface
8	Spindle head
9	Spindle head slideways
10	Spindle nose
11	Arbor
12	Overarm
13	Overarm slideways
14	Front arbor support
15	Rear arbor support

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